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(54) Title: VITRIFICATION SOLUTIONS FOR SHELF PRESERVATION OF CELLS, TISSUES, ORGANS AND ORGANISMS

(57) Abstract

The method of preservation by vitrification, described in the present application, provides for storage of samples at higher temperatures than in conventional methods and can be applied to cells, multicellular tissues, organs and organisms. The method of the present invention includes preparing a solution of vitrification non-permeating co-solutes (amino acids, betaines, carbohydrates, or other non-permeating co-solutes that effectively decrease the chemical potential of permeating cryoprotectants in aqueous solutions), a permeating cryoprotectant and a non-permeating cryoprotectant (polyvinylpyrrolidone, polyethylene glycol, dextran, hydroxy ethyl starch, Ficoll, etc.), contacting a sample with the vitrification solution and storing the sample at a storage temperature. The method also includes the step of rehydrating the preserved sample in a rehydration solution prepared in the manner of the vitrification storage solution. The present invention is also directed to a vitrification solution and a rehydration solution as described in connection with the method.